Course Specifications

University: Benha University  Faculty: Benha Faculty of Engineering

Course specifications
Programm(s) on which the course is given: Electrical Engineering technology.
Major or minor element of programmes: Major
Department offering the programme: Electrical Engineering technology Dep.
Department offering the course: Electrical Engineering technology Dep.
Academic year / Level: second year
Date of specification approval: 2009

A- Basic Information
Title: Digital logic circuit  Code: E211
Credit Hours: N.A.  Lecture: 2
Tutorial: 1  Practical: 1  Total: 4

B- Professional Information
1 - Overall aims of course
Upon successful completion of this course, the overall course objectives are to provide a general and basic foundation for understanding and designing digital logic systems such as simple combinatorial circuits and to give an introduction to instruction sets and processor design methodology. The fundamental concepts and methods of analysis.

2- Intended learning outcomes of course (ILOs)
a. Knowledge and understanding:
   • explain the overall objective of Digital logic circuit
   • Explain designing a digital logic circuit.
   • Students develop an ability to conduct experiments.
   • Define a test procedure (including objectives and equipment set-up) to measure the characteristics of an electronic device or circuit (analog or digital)

b. Intellectual skill
   • designing a digital logic circuit ;
   • ability to conduct experiments;
   • Work as members of a team to complete a project ;
c- Professional and practical skills

  c.1 Number systems (binary, octal, hexagonal) number base conversion;
  c.2 Complement binary addition, subtraction, multiplication, and division binary codes;
  c.3 Boolean algebra (basic definition, theorems, and properties);
  c.4 Boolean functions (standard form, simplifications, minimization of logic expressions using k-map and tabular methods);
  c.5 Digital logic gates design of combinational logic circuits;

d- General and transferable skills

By the end of this course, the student should be able to:

  d.1 Work cooperatively and effectively in a group
  d.2 Find information independently

3- Contents

<table>
<thead>
<tr>
<th>Topic</th>
<th>No. of Hours</th>
<th>Lecture</th>
<th>Tutorial/Practical</th>
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</thead>
<tbody>
<tr>
<td>Number systems (binary, octal, hexagonal) number base conversion.</td>
<td>8</td>
<td>6</td>
<td>3/3</td>
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<tr>
<td>Complement binary addition, subtraction, multiplication, and division binary codes.</td>
<td>16</td>
<td>8</td>
<td>2/6</td>
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<tr>
<td>Boolean algebra (basic definition, theorems, and properties).</td>
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<td>4</td>
<td>2/2</td>
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<tr>
<td>Boolean functions (standard form, simplifications, minimization of logic expressions using k-map and tabular methods).</td>
<td>11</td>
<td>6</td>
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<tr>
<td>Digital logic gates design of combinational logic circuits.</td>
<td>8</td>
<td>4</td>
<td>2/2</td>
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<tr>
<td>Total</td>
<td>56</td>
<td>28</td>
<td>28</td>
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4- Teaching and learning methods
   4.1- Lectures
   4.2- Tutorials
   4.3- Practice in Laboratories
   4.4- Internet collected information and Self-study projects

5- Student assessment methods
   5-1 Written exams (Final and Midterm), assignments and quizzes to assess
      knowledge and understanding, solving problems skills and interpretation
      capabilities of physical phenomena.
   5-2 Oral exams to assess the abilities of discussing physical concepts
   5-3 Practical exam to assess measuring and professional skills

Assessment schedule
   Midterm  ................. Week No.  8
   Final written exam ..........Week No. 15

Weighting of assessments
   Mid-term examination  40%
   Final-term examination 60%
   Total 100%

6- List of references
   6.1- Lecture notes
   6.2- Internet Facility
   6.3- Recommended books
      1. 1-DIGITAL LOGIC DESIGN " MORIS MANO "
      2. 2- DIGITAL LOGIC DESIGN , FOURTH EDITTION
      3. BY BRION HOLDSWORTH
      4. 3- DIGITAL LOGIC APPLICATION AND DESIGN
      5. BY R.M.MARSTON

7- Facilities required for teaching and learning
   Lecture rooms – Tutorial section rooms – Experimental Labs - computers – Virtual
   simulation programs

Course coordinator: .........................
Head of Department: Assoc. Prof. Ghada Amer
Date: